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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/441,805	11/17/1999	DAVID F. SMITH	981117DS	5064

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EXAMINER	
BELLO, AGUSTIN	
ART UNIT	**PAPER NUMBER**
2633	10

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/441,805	SMITH ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Applicant's Request for Reconsideration

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi (U.S. Patent No. 6,040,933).

Regarding Claims 1 and 11, Khaleghi teaches a wavelength division multiplexed optical system comprising: a plurality of optical transmitters (reference numeral Tx1-Tx4 in Figure 1), each transmitter configured to transmit information at via at least one signal wavelength at a bit transmission rate and signal power, and wherein at least one transmitter (reference numeral Tx1 in Figure 1) transmits information at a first transmission rate and signal power and at least one other transmitter (reference numeral Tx2 in Figure 1) transmits information at a second transmission rate and signal power and the second bit transmission rate and second signal power are selected such that the second bit transmission rate is less than the first bit transmission rate (column 6 lines 6-13) and, a plurality of optical receivers (reference numeral Rx1-Rx4 in Figure 1), each receiver configured to the receive information transmitted via at least one of the at least one optical wavelengths, wherein the second receiver (reference numeral Rx2 in Figure 1) is

configured to receive information at a second bit transmission rate (column 6 lines 6-13) and a second signal power at a different destination (e.g. receiver Rx2 is at a different location than receiver Rx1 as seen in Figure 1) than said first receiver (reference numeral Rx1 in Figure 1). Khaleghi differs from the claimed invention in that Khaleghi fails to specifically teach that the at least one signal wavelength and bit transmission rate of each of said plurality of transmitters is selected to allow for the transmission of the information via the signal wavelength to at least a corresponding one of said plurality of said receivers without regeneration. However, it is obvious but not inherent that Khaleghi teaches signal transmission without regeneration in that Khaleghi teaches that the optical signals are amplified via optical amplifiers OA1-OA4. It is very well known in the art that optical amplification via optical amplifiers is common in modern optical networks and have made possible the operation of extremely long networks covering large geographic areas without resorting to electronic regeneration to compensate for losses. As such, it is clear that Khaleghi suggests that at least one signal wavelength and bit transmission rate of each of said plurality of transmitters is selected to allow for the transmission of the information via the signal wavelength to at least a corresponding one of said plurality of said receivers without regeneration in accord with the use of the optical amplifiers in the system.

Khaleghi further differs from the claimed invention in that Khaleghi fails to specifically teach that the information transmitted at a first bit transmission rate and first signal power to a first receiver without regeneration would require at least one of electrical regeneration and optical regeneration to reach a second receiver. However, one skilled in the art would clearly have recognized that transmission distances between transmitters and receivers in optical communication system are limited in range, even when optical amplifiers are used to boost

signals. According to these range limitations, one skilled in the art would have recognized that regeneration may have been required in order for a transmission from a first transmitter intended for a first receiver to reach a second more distant receiver, the second receiver being at a location differing from the first receiver. For example, if an optical communications engineer designed a signal to be transmitted from Washington, DC to Philadelphia, PA without regeneration, the engineer would not expect that signal to reach a more distant second receiver in New York, NY, even with the use of optical amplifiers. Instead, the engineer would have recognized that the signal would have required at least one of electrical regeneration and optical regeneration in order to reach a second more distant receiver, being that neither the signal nor the system were designed to carry a first signal intended for a first receiver to a second more distant receiver. Moreover, regeneration of signals to overcome range limitations is well known in the art. Therefore, it would have been obvious to one skilled in the art at the time the invention was made that the information transmitted at a first bit transmission rate and first signal power to a first receiver without regeneration would require at least one of electrical regeneration and optical regeneration to reach a second more distant receiver.

Regarding Claim 3, Khaleghi teaches that the system is configured as a continuous optical path configured to carry signal wavelengths (reference numeral 16 in Figure 1).

Regarding Claim 12, Khaleghi teaches that said providing includes providing a plurality of optical receivers (reference numeral Rx1-Rx4 in Figure 1) configured to each receive at least one signal wavelength; and, said transmitting a second information set includes transmitting a plurality of information via a plurality of signal wavelengths (column 3 lines 54-57) at different bit transmission rates (column 6 lines 6-13) and signal powers (column 6 lines 26-34) sufficient

to be received by at least one of the plurality of optical receivers without regeneration (via use of optical amplifiers as discussed regarding claims 1 and 11 above).

4. Claims 7, 8, 13, 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi in view of Taylor (U.S. Patent No. 5,938,309).

Regarding Claim 7, Khaleghi differs from the claimed invention in that Khaleghi fails to specifically teach that at least one of said plurality of optical transmitters includes an inverse multiplexer configured to separate a high bit rate signal into a plurality of lower bit rate signals, said at least one transmitter being further configured to upconvert at least two of the lower bit rate signals onto corresponding signal wavelengths; and, at least one of said plurality of optical receivers includes an inverse demultiplexer configured to receive said plurality of lower bit rate signals from said at least one receiver and provide the high bit rate. However, Taylor, in the same field of endeavor, teaches that it is well known in the art to use an inverse multiplexer (reference numeral 32 in Figure 1) configured to separate a high bit rate signal (reference numeral 30 in Figure 1) into a plurality of lower bit rate signals (e.g. four OC-48 signals output from inverse multiplexer 32 in Figure 1), said at least one transmitter (reference numeral 20, 22 in Figure 1) being further configured to upconvert at least two of the lower bit rate signals onto corresponding signal wavelengths; and, at least one of said plurality of optical receivers includes an inverse demultiplexer (reference numeral 150 in Figure 1) configured to receive said plurality of lower bit rate signals from said at least one receiver and provide the high bit rate (e.g. OC-192 output from inverse demultiplexer 150 in Figure 1). One skilled in the art would have been motivated to include the elements taught by Taylor in the system of Khaleghi in order to allow optical communication between a diverse set of optical transmitter and receivers. Therefore, it

would have been obvious to one skilled in the art at the time the invention was made to have included the elements of Taylor in the system of Khaleghi.

Regarding Claim 8, the combination of Khaleghi and Taylor teaches that at least one of said plurality of optical transmitters is configured to transmit information at the high bit rate to at least one of said plurality of receivers without regeneration (as discussed above regarding claims 1 and 11, and column 2 lines 4-6, column 6 lines 56-60 of Taylor).

Regarding Claim 13, the combination of Khaleghi and Taylor teaches that transmitting a first information includes transmitting the first information at the highest suitable bit transmission rate (column 2 lines 4-6 of Taylor) and signal power (inherent in the use of amplifiers instead of regenerators) that can be received by said first optical receiver without regeneration (column 6 lines 56-60 of Taylor).

Regarding Claim 14, the combination of Khaleghi and Taylor teaches that said transmitting the plurality of information via a plurality of signal wavelengths includes transmitting the plurality of information via a plurality of signal wavelengths that minimize the transmission loss in the optical path (column 4 lines 27-30 of Taylor).

5. Claims 2, 4-6, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi in view of Taylor and Mizrahi (U.S. Patent No. 6,069,719).

Regarding Claim 2, the combination of Khaleghi and Taylor differs from the claimed invention in that it fails to specifically teach at least a portion of said plurality of transmitters optically communicate with at least a portion of said plurality of optical receivers through at least one of an optical router and add/drop device. However, the combination of Khaleghi and Taylor suggest that some of the signals could be diverted by an add/drop device (column 6 lines 47-49

of Khaleghi, column 6 lines 21-24 of Taylor) or to a router connected to another optical system (column 8 lines 9-12 of Taylor). Furthermore, add/drop devices and routers in optical systems are very well known in the art as shown by Mizrahi (Figure 1). One skilled in the art would have been motivated to have included add/drop devices along the communication line in order to allow for wavelengths to be dropped or added when needed. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to allowed at least a portion of said plurality of transmitters optically communicate with at least a portion of said plurality of optical receivers through at least one of an optical router and add/drop device.

Regarding Claim 4, the combination of Khaleghi, Taylor and Mizrahi teaches that said system includes a plurality of optical access ports (reference numeral 20, 30 in Figure 2 of Mizrahi) configured to allow optical signal wavelengths to be transmitted into and received from said optical path and to prevent optical signal wavelengths from completely traversing said continuous path (e.g. dropped signals in Mizrahi).

Regarding Claim 5, the combination of Khaleghi, Taylor and Mizrahi teaches wherein said plurality of access ports includes at least one of an optical transmitter (column 5 lines 10-13 of Mizrahi) and an optical receiver (column 4 lines 29-32 of Mizrahi).

Regarding Claim 6, the combination of Khaleghi, Taylor and Mizrahi teaches that said plurality of access ports includes at least one of an optical switch and an add/drop multiplexer (reference numeral 60, 90 in Figure 1 of Mizrahi) configured to insert and/or remove optical signal wavelengths from said path.

Regarding Claim 9, the combination of Khaleghi, Taylor and Mizrahi teaches at least one of said plurality of optical transmitters includes an electrical multiplexer (column 4 lines 66-67

and column 5 lines 1-4 of Taylor) configured to combine system information with communications traffic information (column 8 lines 16-20 of Taylor and the service channel taught by Mizrahi) and transmit the system and communications traffic information via at least one of the signal wavelengths (e.g. λsc of Mizrahi); and, at least one of said plurality of optical receivers includes an electrical demultiplexer (column 7 lines 65-67, column 8 lines 1-6 of Taylor) configured to separate the system information from the communications traffic information (column 8 lines 16-20 of Taylor).

Regarding Claim 10, the combination of Khaleghi , Taylor and Mizrahi teaches that said system includes an add/drop multiplexer (reference numeral 60, 90 in Figure 1 of Mizrahi) configured to remove and insert the at least one signal wavelength carrying the system information (e.g. service channel of Mizrahi, or overhead bits of Taylor) combined with communications traffic and at least one other signal wavelength carrying only communications traffic (reference numeral 64, 94 in Figure 1 of Mizrahi).

Response to Arguments

6. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection. Furthermore, the applicant's argument regarding a continuous optical path has been noted, but it is clear that Khaleghi teaches a continuous optical path in that path 16 connects transmitters with receivers. The applicants argument against the combination of Taylor and Mizrahi to teach the limitations of claims 9 and 10 has been noted. However, the examiner maintains the rejection of claims 9 and 10 since it is clear that overhead bits are known to carry system information. Furthermore, it is clear that the service channel of Mizrahi carries system information. Moreover, the combination of references clearly teaches the

combination of signals carrying system and communication information with signals carrying only communication traffic in that not all of the signals will carry system information according to the teachings of Taylor. According to Taylor, overhead bits could be added when plural optical channels are created from a single optical signal (reference numeral 30, 32 in Figure 1) or when a single optical channel is created form plurality optical channels (reference numeral 20, 22 in Figure 1). Clearly, transmitter 40, 50, and 60 do not meet these requirements, and therefore would not have the overhead bits added. The information from these transmitters is then combined with the information and system information signals created at the other transmitters.

7. In response to applicant's argument that the inverse multiplexer taught by the combination of Mizrahi and Taylor does not meet the claim limitations, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

8. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., combining signals carrying system and communication information with signals carrying only communication traffic) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Waarts, Dejneka, Cohen, and Alexander teach optical communication system that do not use regenerators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB
August 4, 2003

JASON CHAN
SUPERVISORY PATENT EXAMINER
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